

EACH ONE, TEACH ONE

Civil rights leader Bob Moses brings grassroots mathematics education to South Florida's urban schools

Story by Mark E. Hayes
Photos by Marimer Codina

They ride long yellow buses from Mississippi and Louisiana — dozens of high school students arriving in Miami to teach and preach their new, distinctive brand of academic activism. They are the young people of the Algebra Project, the modern heirs of the civil rights movement. The mathematically-minded children of Bob Moses have come to town, and they have some serious fun to share.

Over the past two years, legendary civil rights activist, MacArthur Genius Fellowship winner and down-to-earth Lanier High School algebra teacher Robert Moses has partnered with FIU's Center for Urban Education and Innovation to bring the fruits of the Algebra Project to Miami's public schools. He is an eminent scholar of the Center for Urban Education, where he joins fellow MacArthur Genius winner and center Director Lisa Delpit, also a pioneer in urban education.



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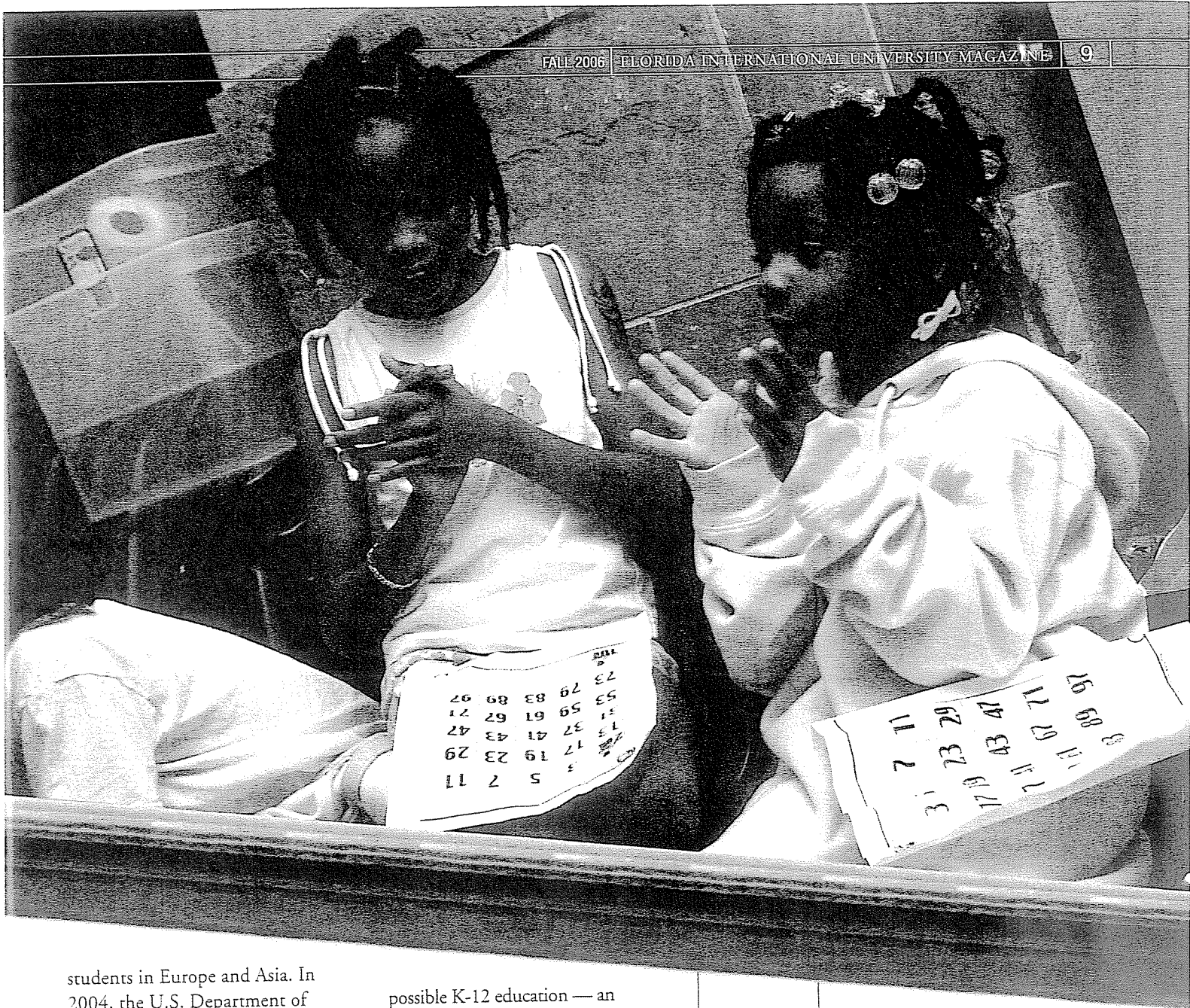
Changing the educational system of the nation is not a job he can do by himself — in fact, the degree and scale of change Moses envisions requires that everybody get involved. In 2005, Moses and his collection of math activists took part in and, at many times, led the student-centered workshop, "Quality Education as a Civil Right" at the Homeless Assistance Center in downtown Miami.

This summer, Moses led the Summer Mathematics Institute at the Biscayne Bay Campus, a college preparatory program in mathematics for high school graduates. In August 2006, Moses initiated the first Algebra Project site in a Miami high school at Edison Senior High. Along with FIU doctoral student Mario Eraso, Moses will teach 20 freshmen, who are struggling with mathematics, five days a week for 90 minutes a day. He will teach the students for four years until they graduate.

Most people agree that public schools in the United States aren't working properly — that is, they don't do enough to prepare young people for whatever future awaits them. But the roots of the problems in our schools and the possible solutions to fix them are hard to find. From the highest level of government, there is talk of the soft bigotry of low expectations and the hopeful remedy of standardized testing, of a uniform curriculum, vouchers, and charter schools. No child will be left behind.

But as Moses sees it, lots and lots of children are being left behind — especially in poor and urban schools. According to the Urban Institute, 50 percent of black ninth graders and 47 percent of Hispanics do not graduate in four years. Drop-out rates approach 80 percent in some poor and urban schools.

In the area of math and sciences, U.S. students routinely trail behind



students in Europe and Asia. In 2004, the U.S. Department of Education released the findings of an international student assessment with this summary: "America's 15-year-olds performed below the international average in mathematics literacy and problem-solving."

Moses talks about the "sharecropper education of low expectations" that has been in place since the national educational system was desegregated decades ago. It isn't necessarily a black and white issue, he suggests, but rather an issue of what public schools have become for most young people — a place to acquire merely enough basic education to work in a service or low-end industrial job.

The central issue, for Moses, is one of civil rights. If young people are to have future access to the best possible jobs, then they must also have the best

possible K-12 education — an education that provides every child with the opportunity to go to college and, afterwards, work in a global economy that is driven less by industry and more by information. The key to preparing everyone — and he means everyone — for college and for the economy of the future, suggests Moses, is the ability to do the abstract and symbolic thinking best developed in an algebra class.

"In today's world," he argues, "economic access and full citizenship depend crucially on math and science literacy. Access for all to this level of education is the next civil right."

A radical solution

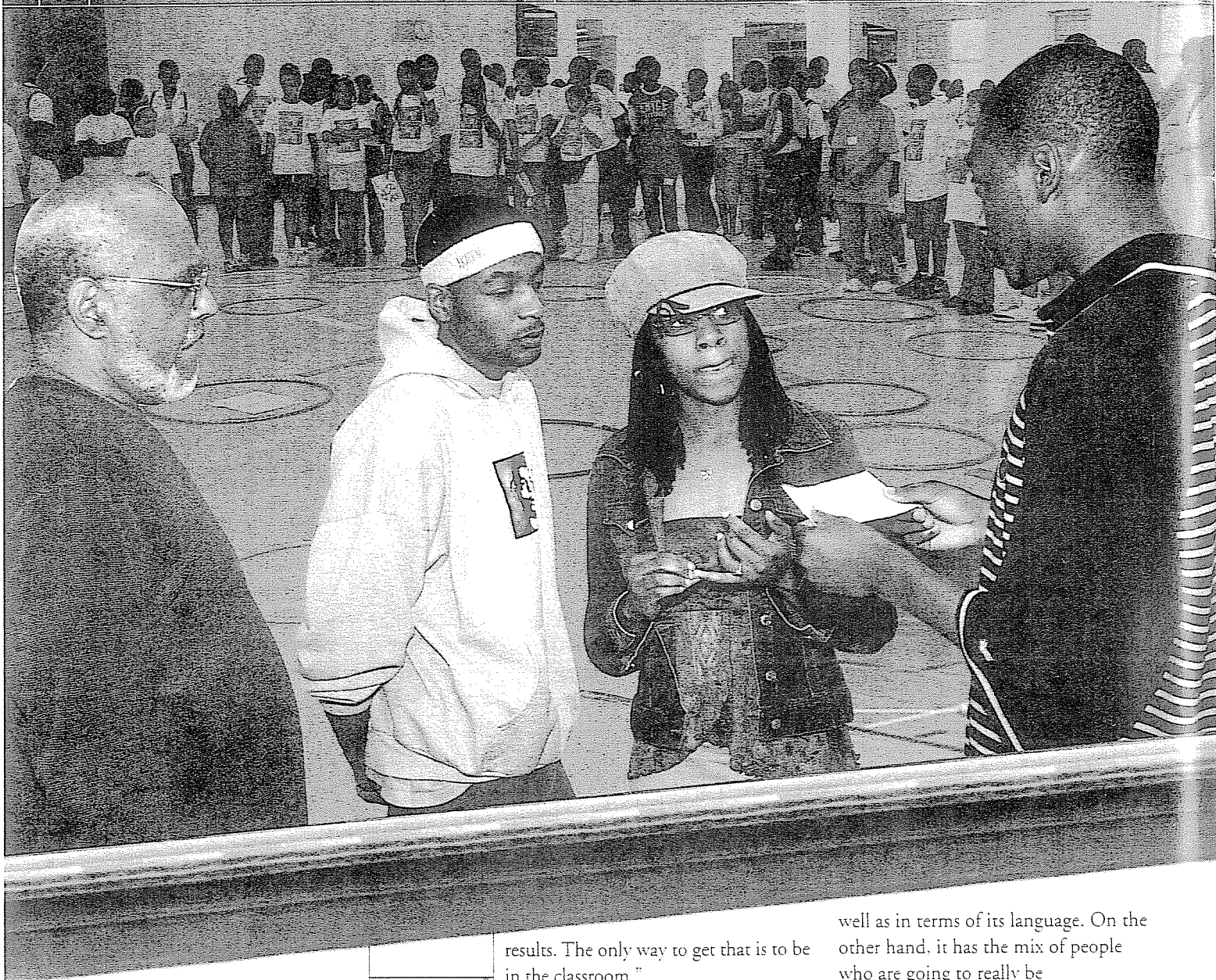
The roots of Moses' life's work can be found in his remarkable book, "Radical Equations." When Moses uses the word radical, he's not just

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making a mathematical pun. He quotes the civil rights activist Ella Baker: "I use the term radical in its original meaning — getting down to and understanding the root causes."

Moses developed the basic framework for a new, more accessible approach to teaching algebra during the 1980s when his daughter was a middle school student in Cambridge, Massachusetts. The idea is to use direct experience in the real world to provide a model for abstract mathematical concepts. Students then work with those concepts symbolically. For instance, Moses taught the concept of the number line with its positive and negative numbers, by using the Boston subway system.



The middle-school part of The Algebra Project is now a far bigger venture than Moses can handle alone. It is an organization of more than 300 teachers across the country that serves 10,000 students. Having figured out the basics with middle schoolers, Moses has, since 1996, been working with students at Lanier High School in Jackson, Mississippi. So, in addition to being a national leader of educational innovation, he typically teaches two sections of juniors and one section of sophomores.

"To understand fully the nature of the work," he said, "you have to roll up your sleeves and be involved. You have to really know what it means in the deepest sense to break through and actually get student production and

results. The only way to get that is to be in the classroom."

The Miami-Dade school system is the fourth largest in the nation. Like many urban school systems around the country, it faces the continual challenge of meeting the needs of an increasingly diverse student population. In 2004, the district employed more than 19,000 teachers and enrolled 360,000-plus students. More than 60 percent of those students qualified for free or reduced lunches, an indicator of poverty levels. Miami-Dade's schools are a cultural melting pot, with students who speak dozens of languages, and come from even more ethnic groups.

"Miami doesn't seem to look toward the rest of the country," Moses observes. "It looks toward the Southern Hemisphere, both in terms of its culture, in terms of its politics, as

well as in terms of its language. On the other hand, it has the mix of people who are going to really be instrumental in defining issues for the country. And it also has the glaring issue which is facing the country: Can we continue to be a nation which has these enormous differences in wealth?"

All the more reason for FIU's Center for Urban Education and Innovation to invite this education leader to bring his work to South Florida. When he is working in Miami, his schedule is packed with student-centered activities. It's all part of his grassroots approach to changing a system that doesn't serve the needs of the people who are in it.

Seriously fun mathematics

At the Homeless Assistance Center on North Miami Avenue one afternoon, in the facility's gymnasium,



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some 40 or so students are running around in what appears to be barely organized chaos. Slips of paper clutched in their hands, four teams of middle school students sprint back and forth. The floor is covered by a network of hoops and colored tape — red, blue and yellow. It's hard to tell what's going on exactly, but the kids are clearly engaged, in between all the running, in some very intense calculations in group conference.

Moses stands smiling in a corner of the gym and watches the rather elaborate game of hopscotch unfold. He explains that the game is designed to teach the Möbius Function, an important multiplicative operation in number theory and combinatorics.

The game continues. This is serious fun — spirited play full of yelling and jumping up and down. But it isn't gym class or recess, it's an algebra lesson. Moses again explains to the adults observing how the game works:

"What you get from a game like this is a conceptual language, which is nobody's spoken language, and the actual symbolic representations that are in all their science and math textbooks. The transition from spoken language or natural language to conceptual language — which is the scientist's made-up language — is a transition that the students need to learn. But it has to be put out on the floor for them."

Later in the day, math educator Jose Jimenez who worked with Moses while an FIU graduate student, arrives for a community forum to discuss quality education as a civil right. Jimenez spent half a year at Lanier High in Mississippi working with Moses. He is quick to point out the need for public schools to move beyond high-stakes testing.

"Students are bored in math class," he says. "They lose hope and lose interest. If we're able to motivate them somehow, they'll be able to continue learning. We focus too much on single individual achievement. We all must rise."

Grassroots reform, especially when

it develops with young people (not on them) in the classroom (not in state capitals) looks messy. Someone coming into the gymnasium and seeing the Möbius Function game in progress might never realize math was being learned. What Moses and his like-minded teachers and students are doing is simply drawing on, in his words, "the everyday culture of kids. What they're into. How do we show them their experiences are related to important mathematics?"

Change from the bottom up

Some of the students who have been involved in the Algebra Project for many years have set up the Young People's Project, now an independently operating student-run group supporting mentoring, training math literacy workers, and taking part in community activism. They take what they have learned from Moses and apply it to the larger project of education reform.

These ambassadors for math literacy have a simple slogan: "Each one, teach one."

Over the months and years, slowly, the skills and ideas and aspirations have been passed on from teachers to students, from older students to younger, from one to another. In South Florida schools like Finlay Elementary, Lake Stevens Elementary, Filer Middle School, Miami Jackson High, Booker T. Washington Senior High and John A. Ferguson Senior High — as well as many others — students are taking charge of their own educations.

All these lessons about changing a system from the bottom up Bob Moses learned fighting for voting rights in Mississippi in the early 1960s as part of the larger civil rights movement. In his mind, there's a short distance between "Each One, Teach One" and "One Person, One Vote."

"When we were working on the right to vote, it was very important for the sharecroppers to be involved in the process of getting that right for themselves," Moses says. "It was



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important for them to know that this was something that they demanded and struggled for. You can't hand people democracy, you can't present it to them as a gift. Democracy has to be struggled for, and you have to engage in the process of attaining it.

"Education is like that also," he continues. "You can't hand the students their educations. They have to decide that they want an education. They have to struggle for it. You can have reforms. But the problem is a missing conversation."

In other words, if you want the kids to care about learning, they must have a legitimate say in how schools are run.

In the larger picture, what Bob Moses has begun now extends far beyond him — and he is content to have it that way. His influences are the forgotten names in the front lines of the civil rights movement in the 1950s and 60s, "people," he says, "who are not necessarily in the history books, but people who belong to a legacy for whom what is most important in this country is how you can still live a life of struggle. It's still a country in which you can have a meaningful life. Each one was able to make a difference."

As clearly as Bob Moses is a man on a mission — and he is happy to meet with public officials, education leaders and journalists — his passion for teaching always leads him around to his students. Back in the gym where the Möbius game was being played, soon after finishing his talk with a few grown-ups, he drifts over to the bleachers and begins talking with a pair of his students or rather, the young men begin talking to him. Bob Moses is always sure to listen carefully before he responds — speaking softly and with hopeful patience born of many years of struggle. ■

Mark E. Hayes is a freelance writer in Miami. His cultural commentary feature, Passing Notes, can be heard on 88.9 FM Serious Jazz. He teaches and serves as the director of the Center for Writing at Palmer Trinity School.